

©Borgis

Przemysław Zuratynski¹, Daniel Slezak¹, Piotr Robakowski², Marlena Robakowska³, Anna Tyranska-Fobke¹, Kamil Krzyzanowski¹, *Klaudiusz Nadolny^{4,5}

The management of a mass casualty incident/disaster by a medical dispatcher in a centralized medical dispatch center

Zarządzanie w trakcie zdarzenia masowego/katastrofy przez dyspozytora medycznego w skoncentrowanej dyspozytorni medycznej

¹Chair and Department of Emergency Medicine, Medical Rescue Workshop, Faculty of Health Sciences with Subfaculty of Nursing and Institute of Maritime and Tropical Medicine, Medical University of Gdansk, Poland

²Faculty of Social Sciences, University of Gdansk, Poland

³Department of Public Health and Social Medicine, Faculty of Health Sciences with Subfaculty of Nursing and Institute of Maritime and Tropical Medicine, Medical University of Gdansk, Poland

⁴Department of Emergency Medicine, Faculty of Health Sciences, Medical University of Bialystok, Poland

⁵University of Strategic Planning in Dabrowa Gornicza, Poland

Keywords

medical segregation, mass accident, Command System of the State Emergency Medical Services

Słowa kluczowe

segregacja medyczna, wypadek masowy, System Wspomagania Dowodzenia Państwowego Ratownictwa Medycznego

Conflict of interest

Konflikt interesów

None

Brak konfliktu interesów

Address/adres:

*Klaudiusz Nadolny
Department of Emergency Medicine
Medical University of Bialystok
37 Szpitalna Str., 15-295 Bialystok, Poland
Phone: +48 513082398
E-mail: knadolny@wpr.pl

Summary

A mass casualty incident or a catastrophe require implementation of numerous dispatching, planning, reporting and management procedures. Many procedures involve a medical dispatcher who is the most significant link between the injured and rescuers providing emergency medical services and healthcare. The main responsibilities of medical dispatchers include: collecting information on incidents, setting priorities and prompt dispatching emergency medical service teams to the scene. Actions of the medical dispatcher should be coordinated with the functioning of the Command Support System of the State Emergency Medical Services. In case of a mass casualty incident, an emergency medical dispatcher who works in a centralized dispatch center receives an emergency call. Every workstation in the dispatch center is equipped with a radio station to ensure contact with emergency medical service teams and hospitals. The medical dispatcher follows the procedures related to potential cases of mass casualty incidents/plural events. The procedures have become guidelines of the national consultant in emergency medicine and were confirmed by the Ministry of Health. every medical dispatcher is obliged to regularly participate in professional development training described in the relevant implementing acts.

Streszczenie

Zdarzenie o charakterze masowym czy katastrofa wymagają wdrożenia wielu procedur z zakresu dysponowania, planowania, raportowania oraz administrowania. Wiele z nich spoczywa na dyspozytorze medycznym jako najważniejszym ogniwie pomiędzy poszkodowanymi a osobami udzielającymi medycznych czynności ratunkowych czy świadczeń zdrowotnych. Szczegółowo dyspozytor medyczny zobligowany jest głównie do przyjmowania powiadomień o zdarzeniach, ustalania priorytetów i niezwłocznego dysponowania zespołów ratownictwa medycznego na miejsce zdarzenia. Całość powinna współgrać z Systemem Wspomagania Dowodzenia Państwowego Ratownictwa Medycznego. W przypadku zdarzenia o charakterze masowym dyspozytor medyczny pracujący w skoncentrowanej dyspozytorni otrzymuje zgłoszenie alarmowe. Każde stanowisko w dyspozytorni wyposażone jest w radiostację do kontaktu z zespołami ratownictwa medycznego i szpitalami. Dyspozytor medyczny opiera się na procedurach postępowania na wypadek wystąpienia zdarzenia mnogiego/masowego. Procedury uzyskały status zaleceń konsultanta krajowego w dziedzinie medycyny ratunkowej, a także zostały zatwierdzone i wprowadzone do stosowania przez ministra zdrowia. Każdy dyspozytor medyczny zobligowany jest do stałego doskonalenia zawodowego określonego w odpowiednich aktach wykonawczych.

A mass casualty incident and a disaster require reporting (analytics), and management procedures. an implementation of numerous dispatch, planning, Many of the procedures involve a medical dispatcher

who is the most significant link between the injured and the rescuers performing emergency medical procedures and providing healthcare (1). The Law of 8 September 2006 on State Emergency Medical Services (Journal of Laws of 2013, item 757, with amendments) (2) ensures a complete understanding of the role of a medical dispatcher.

According to the definition, a medical dispatcher must be a representative of one of the medical professions, i.e. a doctor, a nurse, and a paramedic with a minimum of five years of experience in an emergency medical team, a hospital emergency department, an intensive care and anesthetic department or the hospital admission desk. Professional qualifications of doctors and nurses should be compliant with the applicable regulations. Due to the dynamically transforming regulations, guidelines, procedures, and systems, every medical dispatcher is obliged to regularly participate in professional development training described in the relevant implementing acts. As the most important element of the total system of Emergency Medical Services, a medical dispatcher provides healthcare services (Act of 15 April 2011 on Medical Activity (3)). The exact main responsibilities of medical dispatchers include collecting information on incidents, setting priorities and prompt dispatching emergency medical teams to the place of incident. The actions of a medical dispatcher should be coordinated with the functioning of the Command Support System of the Emergency Medical Services. Within this scope, a medical dispatcher is responsible for providing required information that facilitates emergency medical procedures performed at the place of incident and supervised by the emergency team leader. A medical dispatcher is accountable for having an up-to-date knowledge about the availability of the units of the system and about the units cooperating with the system in the particular operational regions. This knowledge affects patient placement. On each occasion, a medical dispatcher should cooperate with and inform emergency departments, trauma centers or other units specialized in providing healthcare required by emergency medical services. The administrative tasks of medical dispatchers include collecting and archiving current information on incidents and ongoing emergency medical procedures. It needs to be mentioned that a medical dispatcher is the first point of contact with the emergency system for witnesses and sometimes patients themselves, and is expected to provide necessary information on first aid assistance. Consequently, the knowledge, experience, skills, and decisiveness of a dispatcher affect the chances of survival (4, 5).

The above-presented tasks that characterize the work of a medical dispatcher may be performed in any situation, e.g. in situations of crisis, i.e. in mass casualty incidents and disasters. The unified Command Support System of the Emergency Medical Services was created in agreement with the plans of the Polish Ministry of Health and in cooperation with the Polish Ministry of the Interior and Administration. The system is universal for all Polish regions

and is represented by the local governors (the voivodes) in the particular Polish districts (voivodeships). This universal and unified computerized system is used to accept emergency calls and messages about incidents reported by means of the emergency numbers (112, 999), dispatch emergency medical teams, report medical incidents and localize the particular events, teams and their status on the map which is a part of the Universal Map Module (UMM) integrated with the system. The system ensures proper performance of tasks by emergency medical dispatchers, members of the emergency medical teams, emergency medical coordinating doctors, and some authorized representatives of the Ministry of Health. From the perspective of medical dispatchers, the system enables them the monitoring and management of calls, reported incidents, as well as capacities and resources of the Emergency Medical Services. The role of the system is expected to increase. What is worth mentioning is the teletransmission of the current patient's physiological parameters (e.g. ECG) from the emergency medical team to the specific destination hospital (6, 7).

For several years, Poland has observed a process of centralization of dispatch centers. The centralized structure is expected to improve the emergency and health information management, ensure an efficient transmission of data between emergency services and public order services (accepting 112 and other emergency calls and transferring them to an adequate police unit, state fire service and emergency medical services), and secure the development of the system of Emergency Medical Services based on modern computerized technologies. According to the data provided by the Polish Ministry of Health, there are currently 42 dispatch centers with 226 workstations. The aim is to maintain 18 dispatch centers in 2028 (8).

In the case of a mass casualty incident, an emergency medical dispatcher who works in a centralized dispatch center receives an emergency call. Every workstation in a dispatch center is equipped with radio stations to ensure contact with emergency medical teams and hospitals. A medical dispatcher follows the procedures related to potential cases of mass casualty incidents/plural events (9-11). The procedures have become guidelines of the national emergency medicine consultant and were confirmed by the Ministry of Health. They were implemented in 2014 during expert consultation meetings. The subject of these procedures was the unification of emergency actions in events of potential mass casualty or plural character in all areas of emergency medical services and other areas of Polish healthcare. The procedures have been designed to ensure a proper organization of rescue actions. This objective requires an efficient communication system based on a unified and properly interpreted terminology, as well as on clearly defined information exchange channels. The scope of procedures involves the following positions and areas: emergency medical dispatchers, the national dispatcher of the independent public healthcare units of the Polish Medical Air Rescue, the leader coordinating emergency medical procedures, emergency medical team members, emergency medical

coordinating doctors, hospital emergency departments, hospital admission desks, hospital units specialized in emergency medical healthcare services, voivodes (local governors). Each of the above-mentioned areas or roles involves a description of the scope of tasks and expected procedures along with an action checklist form and an action evaluation form (9).

According to the Regulation of the Minister of Health of 10 January 2014 on framework procedures of accepting emergency calls by medical dispatchers and dispatching emergency medical teams, the management of events with a potential high number of casualties by a medical dispatcher is based on accepting the message about the particular incident (Journal of Laws of 2014, item 66) (12). The role of a medical dispatcher is to categorize the event as a potential mass casualty incident or plural event and to make a high priority decision on initiating the relevant procedure (mass casualty incident/plural event) (13). According to the procedure, the tasks of a leading medical dispatcher (LMD) and a cooperating medical dispatcher (CMD) are defined during the event. These roles manage actions from the same dispatch center. It needs to be remembered that, on any occasion, LMD and CMD can be supported by a medical dispatcher from a neighboring dispatch center (NMD). It is a crucial step to inform the leading medical dispatcher about the initiation of the procedure (mass casualty incident/plural event). The LMD uses an LMD procedure form which is the attachment no. 1 to the procedure of a mass casualty incident/plural event (10). The role of the LMD is to analyze the demand for emergency medical teams based on medical history and to dispatch emergency medical teams, including the "HEMS" (Helicopter Emergency Medical Service) teams. The LMD is also responsible for the implementation of the mass casualty/plural event mode in the dispatch center by informing all medical dispatchers about an event of a potential mass or plural character. When the procedure is initiated, the dispatch center functions in a crisis mode. The LMD delegates tasks to CMD. The subsequent task is the identification of transportation routes for the emergency medical teams and the verification of the potential obstacles in reaching the destination point (forests, water reservoirs, mountain areas etc.). The dispatcher should be as precise as possible in describing the characteristics of the incident, i.e. in identifying what type of incident it is (land, air, water) and what are the potential threats (fire, chemical contamination, biological contamination, radiation contamination etc.). The reporting person should provide the dispatcher with an information about the potential number of injured. It is especially important to report the red category of injured according to the START method of triage as there is one emergency medical team required for each individual assigned red. In case of any doubts about the number of injured, it should be estimated that at least 30% of participants of the event are in the red category. The LMD should remember the following rules:

1. In case of an insufficient number of emergency medical teams of the system, consider involving the cooperating units.
2. Remember about a proper real-time security of the particular operational area of the emergency medical teams. Avoid queues and extended waiting time to dispatch to the reported incident.
3. Remember about securing operational areas in compliance with the expected parameters of time from dispatch to arrival at destination (dislocation of other emergency medical teams and units cooperating with the system of Emergency Medical Services).

The LMD should designate a medical action leader (MAL) to ensure proper management at the place of incident. A MAL can be replaced by a more experienced individual at any stage to provide the best possible efficiency of action. The dispatcher should inform the emergency team about the designated MAL. Due to the character of the incident, other services and rescue units should be informed depending on the type and character of the event. Informing other services and rescue units simultaneously with dispatching the emergency medical team is an optimal solution (informing the police, the state fire service, and other units depending on the location and scale of the event). The next task is contacting the national dispatcher of the independent public healthcare units of the Polish Medical Air Rescue (ND-MAR) in case of a potential situation when additional emergency medical "HEMS" teams might be required (contact with the operational center under +48 2222 99999/98). An efficient coordination of action requires proper discipline in radio correspondence, i.e. instructing the emergency medical team how to use radio connection during rescue actions. When connecting and corresponding, there is a valid principle: Minimum reporting time; maximum content. The role of a medical dispatcher involves informing the emergency medical coordinating doctor (EMCD) about an incident of a potential mass/plural character and providing necessary information about the event, i.e. the demand for emergency medical teams dispatched by a neighboring medical dispatcher (NMD) after designation by the local or neighboring emergency medical coordinating doctor, capacities of hospital departments ready to admit the red category of the injured, and further capacities in the subsequent one or two hours (if the planned hospital surgeries are suspended). The capacities to be verified include the number of available operating rooms, the type of rooms and their operating teams, intensive therapy (IT) stations with respirators, and the number of available respirators (excluding IT stations). The LMD and the CMD should remember to inform the manager of the medical unit/the spokesman about the event of a potential mass/plural character and provide necessary information. Any collected pieces of information and actions performed should be noted in detail. As already mentioned before, attachment no. 1 is a document and a specific kind of a checklist. Staying in touch with the EMCD and the MAL, the medical dispatcher has got a report of initial triage that is analyzed and used to provide emergency medical teams, services, and rescue units with the relevant information. At this stage, a verification

of demand for further emergency medical teams is performed together with the MAL. An important management aspect is the implementation of a table of hospitals to be completed in cooperation with the EMCD (attachment no. 12 to the procedure). Based on the information included in the secondary triage report gathered by the MAL and the emergency medical team, the medical dispatcher may provide information about the dispatched teams and (together with the MAL) verify the demand for further emergency medical teams. Having access to the complete list of hospitals, the dispatcher should provide information about the hospital assigned to the red category of the injured. This step opens a new stage that involves the knowledge of dislocation of the casualties. The table of dislocation of the injured (attachment no. 11) is useful for this purpose. This stage is performed together with the MAL based on the condition of the injured, transportation time, the availability of specialized treatment, the therapeutic capacities of the emergency medical team, and, in cases of dislocation, cooperation with the EMCD, hospital emergency departments, admission desks, and hospital units specialized in emergency medical healthcare.

A proper dislocation of the injured is, apart from the action at the place of incident, a crucial element affecting the effectiveness of the rescue action. An adequate planning of dislocation helps to avoid the transfer of the incident to the hospital and ensures prompt access to the right means of treatment of patients. The LMD or the CMD should inform the healthcare units that are destination points for the group of red category patients about the form of the injuries, the condition of patients, the codename of the emergency medical team and the expected arrival time of the team. All information should be reported. During the rescue action, a continuous communication should be maintained with the emergency medical team, the EMCD, and the ND-MAR. The availability of the emergency medical team should be verified, information should be exchanged with the EMCD as far as the secondary triage report is concerned, and the table with hospitals should be updated with the information received from the EMCD. At this point, further healthcare units are assigned to the groups of red and yellow category patients. The availability of these units within one hour and two hours is evaluated.

Every mass casualty incident/plural event and disaster should be completed by receiving a message about the time of completion of emergency medical procedures and forwarding this information to the EMCD. The person responsible for providing this information is the MAL and the message relates to the time of transferring the last patient to a hospital emergency depart-

ment, an admission desk or a hospital unit specialized in emergency medical healthcare. It is significant to contact the manager of the unit/the spokesman or other individuals according to the internal regulations in order to summarize the activities.

After each rescue action, the medical dispatcher should present a written report on the stages of action and an evaluation of procedures based on the LMD evaluation form. The most important aspects should be included in the report (attachment no. 13 to the procedures), i.e.:

- the date of the mass casualty incident/plural event,
- the time of receiving the information about the event by a medical dispatcher,
- the date of completion of emergency medical procedures (the time of transferring the last patient to a hospital emergency department, an admission desk or a hospital unit specialized in emergency medical healthcare),
- the time of completion of emergency medical procedures (the time of transferring the last patient to a hospital emergency department, an admission desk or a hospital unit specialized in emergency medical healthcare),
- the number and type (specialized, basic, "HEMS") of emergency medical teams participating in the event, their code names, members and dispatch time during the intervention,
- the total number of casualties, an overview of patients including the transportation priority, and the destination healthcare units assigned to them.

Every authorized report should be submitted to the local governor (the *voivode*). Apart from the report, the LMD should complete the action evaluation form (attachment no. 14 to the procedure), i.e. to answer 38 questions related to the cooperation between the MAL, the CMD, the NMD, the ND-MAR, the EMCD, the hospital emergency department, the admission desk, the hospital unit specialized in emergency medical healthcare, the emergency medical team, the state fire service, the police and other services. Answering the questions the medical dispatcher evaluates the aspects of connection, information flow, and decision making. The assessment involves the general flow of the rescue action as well as the actions performed by the medical dispatcher themselves. There is also a possibility to include additional remarks (9, 10).

An organizational success is possible only when the event is effectively managed by a medical dispatcher, who plays a crucial role in the implementation of dispatch procedures, planning, reporting (analysis), and management. It is only in a centralized dispatch center with a higher number of medical dispatchers that the desired results can be achieved.

BIBLIOGRAPHY

1. Briggs S, Brinsfield K: Wczesne postępowanie medyczne w katastrofach. Wydawnictwo Lekarskie PZWL, Warszawa 2007: 1-13.

2. Ustawa z dnia 8 września 2006 roku o Państwowym Ratownictwie Medycznym (Dz. U. z 2013 r., poz. 757, z późn. zm.).

3. Act of 15 April 2011 on Medical Activity (Journal of Laws No. 112, item 654, with amendments).
4. Rzońca G, Nadolny K: Centralizacja Systemu Powiadamiania Ratunkowego na podstawie Zintegrowanej Dyspozytorni Medycznej w Olsztynie. *Na Ratunek* 2016; 3: 49-52.
5. Popławska M, Maślarz M: Organizacja skoncentrowanych dyspozytorni medycznych w województwie małopolski. *Emerg Med Serv* 2015; II(2): 168-170.
6. Gula P: Postępowanie ratownicze w wypadkach masowych i katastrofach. *Medycyna Praktyczna*, Kraków 2009: 7-23.
7. Ustawa z dnia 26 kwietnia 2007 r. o zarządzaniu kryzysowym (Dz. U. z 2007 r., nr 89, poz. 590).
8. <http://www.mz.gov.pl/system-ochrony-zdrowia/panstwowe-ratownictwo-medyczne/system-wspomagania-dowodzenia-prm/> (data dostępu: 18.02.2018).
9. Podgórski M, Nadolny K: Procedury postępowania na wypadek wystąpienia zdarzenia masowego. Ujednolicenie działań na miejscu zdarzenia, ze szczególnym uwzględnieniem ZRM. *Na Ratunek* 2016; 2: 25-31.
10. Zalecenia konsultanta krajowego w dziedzinie medycyny ratunkowej dotyczące procedur postępowania na wypadek wystąpienia zdarzenia mnogiego i masowego; <http://www.mz.gov.pl/system-ochrony-zdrowia/panstwowe-ratownictwo-medyczne/organizacja-systemu-panstwoweratownictwo-medyczne/zdarzenia-mnogiemasowe/> (data dostępu: 17.08.2016).
11. Procedura postępowania na wypadek wystąpienia zdarzenia mnogiego/masowego. Ministerstwo Zdrowia, Warszawa 2015.
12. The Regulation of the Minister of Health of 10 January 2014 on framework procedures of accepting emergency calls by medical dispatchers and dispatching emergency medical teams (*Journal of Laws* of 2014, item 66).
13. Borowicz A, Kucap M: Analiza procedur wypadku mnogiego/masowego. *Na Ratunek* 2016; 2: 32-34.

received/otrzymano: 12.09.2018
accepted/zaakceptowano: 10.10.2018